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INTERNATIONAL FINANCIAL MARKETS AS
SOURCES OF CRISES OR DISCIPLINE:
THE TOO MUCH, TOO LATE HYPOTHESIS

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1 Introduction

Two views dominate policy discussions about the role of international capital flows in the global political economy. Although both agree that high capital mobility is eroding national policy sovereignty, they disagree about the effects such erosion may have. The first view sees it as a positive step, because it constrains governments' tendencies to follow overexpansionary macroeconomic policies for domestic political gain and because it promotes convergence toward low rates of inflation. The advocates of this view typically agree with Haggard and Maxfield (1996, p. 36) that "increased financial integration holds governments hostage to foreign-exchange and capital markets, forcing greater fiscal and monetary discipline than they might otherwise choose." This opinion is consistent with the widespread inclusion of perfect capital mobility as an assumption in current international monetary models.

The second view sees international capital markets as capricious followers of fads and fashions that pose serious challenges to domestic financial stability. Its advocates assume that financial markets are inherently unstable and that their instability has been the primary cause of the recent rash of international financial crises. Adherents of this view maintain that national and international regulation of capital flows should be greatly expanded. Prime Minister Mahathir Mohamad of Malaysia is a leading advocate of this position.

This essay suggests a reality that differs from both of these views. It rejects both the idealized belief that financial markets and governments consistently act on the basis of farsighted, well-informed expectations and

I am indebted to participants in seminars at Claremont McKenna College, Columbia University, Duke University, George Mason University, Harvard University, and the University of Southern California for helpful comments, and also to participants at the Western Economics Association Meetings at Lake Tahoe in 1998. I am also grateful to David Andrews, Marc Bremmer, Aida Budiman, James Dean, Gab-Je Jo, Timur Kuran, James Meigs, Norman Miller, Ekniti Nitithanpras, Kishen Rajan, John Thomas, Jilleen Westbrook, and an anonymous referee for useful contributions. Financial assistance from the Scaife Foundation is gratefully acknowledged.

the contrasting extreme that investors and speculators are the primary causes of international financial instability through the generation of irrational speculative bandwagons. Neither of these views can account for important aspects of the severe financial crises that hit the European Monetary System (EMS) in 1992–93, Mexico in 1994–95, a number of Asian countries in 1997–98, Russia in 1998, and Brazil in 1999.

Rather than being too skittish, financial markets have been too gullible: they have given excessive credibility to public pronouncements that pegged exchange rates would be preserved. The markets have frequently failed, therefore, to provide early warnings of the need for increased financial prudence. When crises have hit, financial markets have often overreacted—at least in terms of the benchmark economic model of well-informed, farsighted, rational speculators—but they have simply been belated messengers, not the causes, of the crises.

I call this view of the operation of financial markets the “too much, too late” hypothesis. The financial markets do provide discipline for economic policies, but the discipline is often felt only when it is too late to induce timely policy adjustments. When market discipline finally kicks in, moreover, the markets often overreact to the crisis.

This hypothesis should be seen as a complement rather than a competitor of recent efforts to understand imperfections in the rational operation of financial markets. Indeed, my hypothesis draws heavily from recent work on the problems of agency, rational herding, moral hazard, and informational asymmetries that may lead privately rational behavior to generate socially irrational or inefficient outcomes. The hypothesis also encompasses less rational explanations such as hubris, failure to do sufficient homework, and occasional panic. It is not a formal theory in itself but, rather, a synthesis that draws on theoretical analysis and empirical observation.

The latest generation of speculative-crisis models suggests that there are zones of vulnerability within which a country is not certain to face a crisis, but in which the fundamentals are too weak to offer firm protection against medium-sized shocks and swings in market sentiment.¹ Within these zones, countries are vulnerable to self-fulfilling speculative attacks and to contagion effects from crises in other countries. A crisis in Italy or Thailand may thus be the shock that brings down the British pound or the Indonesian rupiah. In such cases, the speculative attacks are not divorced from the fundamentals, although

¹ On the evolution of speculative-crisis models and the difficulties of distinguishing between irrational or self-fulfilling speculative attacks, see Krugman (1996). For a recent survey, see Flood and Marion (1998).

they are not inevitable. In the view presented here, these zones of indeterminacy, which may be fairly broad, interact with the relatively short time horizons of many market participants to reduce the effectiveness of international capital flows as a source of discipline for domestic macroeconomic policies. Individual incentives, limited information, the public-choice concept of rational ignorance, and short time horizons in both political and financial markets also play important roles. Although moral-hazard distortions caused by the prospect of government bailouts are a part of this process, they are far from the whole story. These political and financial forces interact to diminish the international financial discipline that might prevent governments from pursuing policies that increase the risk of international financial crises over the long term. This problem has been especially acute where countries have adopted pegged exchange rates. Although mistakes based on incorrect economic views have contributed to most of the crises examined in this essay, it was not mistakes or bad luck alone that generated the series of international financial crises in the 1990s. More fundamental political-economy processes were at work.

Financial markets may not always operate according to the too much, too late hypothesis, and governments may not always succumb to shortsighted political pressures to adopt policies that will lead to crises. The evidence reviewed in this essay, however, suggests that the tendencies for such behavior are sufficiently strong that both scholars and policymakers should give more attention to such intermediate views of international-financial-market behavior. With regard to the popular idea that pegging exchange rates is a potent source of anti-inflationary discipline, for example, the too much, too late hypothesis suggests that in countries that adopt adjustably pegged exchange rates, rather than fixed rates, discipline may as easily be reduced as increased in the short run.² This strengthens the view that for many countries, efforts to promote financial discipline should focus primarily on domestic, rather than international, institutional arrangements.

The too much, too late hypothesis also has important implications for the operation of the International Monetary Fund (IMF). Some have questioned whether the IMF still has a role in a world of high international capital mobility. To the extent that the too much, too late

² The view that exchange rates can be a potent nominal anchor against inflation has been influential at the IMF and has formed the basis of many countries' exchange-rate strategies. For an example of advocacy for using exchange rates as a nominal anchor, see Bruno (1991). For a survey and critical assessment of the literature, see Willett (1998) and Westbrook and Willett (1999).

hypothesis is correct, however, such a role remains. Indeed, the hypothesis suggests that the IMF's surveillance role should be strengthened in order to reduce the frequency of crises and that its capacity for conditional lending once crises have hit should be expanded in order to minimize the adverse economic consequences of such crises. How to do this without increasing moral-hazard incentives for actions that may generate future crises is one of the most important issues facing the international monetary system.

Section 2 reviews the basic political-economy elements of the commonly accepted "discipline" hypothesis. Section 3 analyzes assumptions about the behavior of international financial markets and argues that the popular extremes of both fully efficient farsighted markets and wildly irrational markets are inconsistent with the available evidence. Section 4 discusses one possible intermediate view of the behavior of financial markets, and Section 5 examines recent crises in light of this too much, too late hypothesis. Section 6 reviews the responses of governments to the various crises. Section 7 discusses policy issues raised by the analysis.

2 The Discipline Hypothesis

Much has been made of the roles of high international capital mobility and pegged exchange rates in disciplining domestic macroeconomic policymakers and contributing to disinflation in both industrial and developing countries.³ Although this discipline hypothesis may help explain the convergence of industrial-country inflation rates at low levels, it does not explain the exchange-rate crises that developed around the world in the 1990s.

According to standard rational-choice theory, government actors should normally anticipate the reactions of the private market and thus avoid actions that will promote crises. One version of the pegged-rates-as-discipline argument assumes that exchange rates are genuinely fixed, so that in the long run, countries have no option but to adjust. According to this argument, governments find it in their interest to avoid pursuing policies that will lead to serious balance-of-payments difficulties, and in the face of exogenous shocks, they will begin to adjust

³ See, for example, Andrews (1994), Garrett (1995) Haggard and Maxfield (1996), Milner and Keohane (1996), Andrews and Willett (1997), and Clark and Reichert (1998). For discussions of the conditions necessary for financial-market discipline to be effective, see Lane (1993) and Goldstein and Calvo (1996).

promptly. Just as occurred during the days of the Bretton Woods system, some of the support for pegged exchange rates has come from falsely assuming that adjustably pegged rates were genuinely fixed rates.

A more accurate version of the discipline argument recognizes that exchange rates can be adjusted but that there may be high political costs to doing so. This realization gives governments an incentive to avoid policies that will lead to balance-of-payments crises. In cases where the private market operates according to farsighted rational speculative expectations, therefore, the anticipation of future crises will provide continuous discipline over current macroeconomic policies. More generally, the greater capital mobility is and the more farsighted and informationally efficient financial markets are, the quicker and stronger these disciplining effects on national monetary policy will be. Crucial elements in this discipline argument include:

- the strength of political biases toward inflation,
- the magnitude of the costs that governments anticipate will be imposed on them by future crises and devaluation,
- the magnitude of the costs imposed by following macroeconomic policies to avoid crises,
- the time rate of discount of current versus future costs and benefits,
- the degree of uncertainty about future costs and likely future developments, and
- the behavior of the private sector, especially the degrees of rationality and farsightedness.

Changes in macroeconomic policies tend to influence output and employment more rapidly than prices. With expansionary policies, therefore, most of the benefits come early and the costs come late. With contractionary policies, the costs precede the benefits. In cases where politicians and the general public have short time horizons, this pattern creates an inflationary bias.⁴ The discipline argument is that expansion today would increase the probability of devaluation in the future and that the prospect of this expected future cost would be sufficient to more than offset the short-term incentives to expand. Clearly, this discipline effect is more likely to work when the perceived current benefits from expansion are small, the perceived future costs of devaluation are high, and the perceived link between current expansion

⁴ This is discussed in the literatures on political business cycles and the time inconsistency of optimal monetary policies.

and the probability of future devaluation is strong. The greater uncertainty there is about future effects, the easier it is to rationalize the adoption of policies that are politically expedient in the near term but that carry risks of future costs.

The linkage between current monetary policies and future effects will speed up as the degree of international capital mobility rises. Although the effects of expansion might take several years to generate a crisis, based on its effects on the current account, the outflow of capital in response to a combination of easy money and expectations of a worsening of the underlying balance of payments will speed the onset and increase the magnitude of a speculative crisis. This will increase the expected future costs and shift them closer in time.

Ideally, as the likelihood increases that current policy is becoming too expansionary to be consistent with maintaining the pegged exchange rate or limited rate of downward crawl, incipient speculative capital outflows will cause domestic interest rates to rise. This rise in domestic interest rates will serve as an early warning to investors that risk is increasing and to governments that they need to put their house in order. Optimizing governments will respond to these warnings by adopting corrective policies. The financial markets' behavior will thus have provided a healthy discipline for government policies without having generated an actual crisis. The threat, alone, will have been sufficient.

The frequency of crises, however, suggests that this mechanism often does not work. One problem is that even where governments are following prudent policies, a shock to the balance of payments might require a government to deflate, not just to avoid inflating. The less a country conforms to the criteria of an optimum currency area in terms of wage and price flexibility, factor mobility, and a high marginal propensity to import, the greater the costs from deflation will be.

The expected future costs of devaluation might well be sufficient to induce governments to avoid inflationary policies but not sufficient to induce them to adopt deflationary policies in the face of large negative balance-of-payments shocks. Market expectations to this effect were probably part of the process through which high interest rates in Germany following reunification induced a speculative attack on the French franc, even though France had been following prudent monetary and fiscal policies. Although many officials pointed to this case as an example of destabilizing speculation, it can be argued that the speculative attack was quite rational, albeit self-fulfilling (Eichengreen, Rose, and Wyplosz, 1995, 1996; Obstfeld, 1995; Buiter, Corseti, and Pesenti, 1998). Even if rational, however, it shows one of the disadvantages of

exchange-rate-based discipline strategies. Clearly, France was disciplined at a time when discipline was not required.

Also common are problems of insufficient discipline of the financial markets. This insufficiency may occur through two channels. If governments place a high discount on the future—say, because an election is near—then even substantial expected future costs may be insufficient to offset the expected short-term benefits from current expansion. Such electoral considerations were one of the causes of the 1994 Mexican crisis.⁵ Furthermore, the greater the uncertainty is about whether the exchange rate is becoming seriously overvalued, the more likely a government is to gamble that it can maintain the exchange rate in the short term. Added to this is the problem that if a fiscal expansion is not accompanied by monetary expansion, its initial effects will be to attract capital inflows. With high capital mobility and shortsighted static expectations, as in the Mundell-Fleming model, these inflows will generate an initial balance-of-payments surplus, thus retarding rather than increasing disciplinary effects. As will be discussed in Section 4, this has often been a serious problem.

The less farsighted the private market is and the more easily it is convinced by government promises to maintain the peg, the less effective will be its discipline. Even if the government has a very short time horizon, however, a farsighted private financial market could so speed up the adverse financial effects of a monetary expansion that the political incentives to generate surprise inflation would be undercut. Even with such a shortsighted market, the substantial costs of most crises could be sufficient to discipline a farsighted government. Indeed, farsightedness by either the government or the market could be sufficient to produce discipline. Although farsightedness by both is redundant, shortsightedness by both is an important part of the explanation for the recent crises.

3 The Need for an Intermediate View of Investor Behavior

Economists are understandably suspicious of arguments that markets behave irrationally. We agree that some irrationality exists, but we tend to treat such behavior as an error term in our models, not as a determinant of systematic behavior that can be explained. A typical view of

⁵ For analyses of the Mexican crisis, see the contributions and references in Dornbusch, Goldfajn, and Valdés (1995), Sachs, Tornell, and Velasco (1996a, 1996b), Edwards and Nám (1997), Meigs (1997), French-Davis (1998), and the special 1996 issue of the *Journal of International Economics*.

middle-of-the-road economists is given by Kindleberger in his classic study of *Manias, Panics, and Crashes* (1978, p. 41): “It is much easier to agree that most markets behave rationally most of the time than that all markets do so all the time.” Furthermore, particular market actors may face incentive structures that make their rational actions socially inefficient. Thus, Kindleberger concludes that “despite the general usefulness of the assumption of rationality, markets can on occasions—infrequent occasions, let me emphasize—act in destabilizing ways that are irrational overall, even when each participant in the market is acting rationally.”

The implications of this “hard-core” assumption of economists and rational-choice models are often misunderstood, however. In recent years, many academic economists have written as though the assumption of rationality carries with it the assumption of high degrees of information, long time horizons, and risk neutrality. It is understandable that the dictates of mathematical tractability make such ancillary assumptions common in formal modeling, but their use seems to have generated a tendency to assume that they are therefore true. This has sometimes led economists to conflate high capital mobility with perfect capital mobility and to assume that traditional business-cycle models must be based on irrationality. Casual observation demonstrates that capital mobility is high, but the empirical evidence overwhelmingly refutes the assumption of perfect capital mobility that is so often made in current international macroeconomic models.⁶ Similarly, as a massive amount of empirical research documents, traditional political-business-cycle games are not played at every election, although they are played often in both industrial and developing countries. Current economic conditions have strong effects on popularity polls and voting behavior.

In the areas of both public choice and financial-market behavior, important research is bridging the gap between the extreme assumptions of idealized rational behavior, on the one hand, and irrational behavior, on the other. Starting with the assumption that information is costly to obtain, and focusing on private incentives to be well informed, such research shows that important aspects (albeit not all) of the behavior viewed as irrational in idealized models of rationality can be explained in rational terms when more realistic assumptions are made about the nature of the constraints facing decisionmakers. Drawing on concepts

⁶ For recent surveys and discussions of the empirical literature on the degree of international capital mobility and the efficiency of the foreign-exchange market, see Edwards (1995), Isard (1995), and Obstfeld (1995b).

such as rational ignorance, bounded rationality, the framing of decisions, and problems of agency, scholars are beginning to be able to explain as “reasonable” many kinds of behavior that from an idealized rational perspective, would appear irrational. Recent financial research and analysis has focused on a number of factors that can encourage actors in financial markets to adopt short time horizons and engage in herd behavior. Most of the formal models in this area focus on the difficulties of monitoring agents in a world of costly and asymmetric information.⁷

In large financial organizations, such as the leading banks and investment houses, imperfections in internal incentive structures can also lead to aggregate inefficiency. Agents who are pushing loans or investments quite naturally do not want to hear analysts bearing tales of caution. Many organizations have given much more clout to the former than the latter. Hale (1996, p. 134) has argued, for example, that “Wall Street further encouraged diversification into emerging-market debt and equity by investing heavily in new research, trading, and investment banking departments targeted on Latin America and East Asia. Despite the obvious deterioration in Mexico’s economic position in 1994, some of these firms also tried to downplay the issue of peso currency risk because of concern that it would jeopardize the transactions flow required to support their expensive overhead at a time when Wall Street’s domestic business was in recession.” Human nature seems to include a strong tendency to ignore early warnings that one’s view may be wrong. As Vertzberger (1990, p. 113) documents, studies of decisionmakers typically find that “the search for and attention to information is biased toward information that is congruent with *a priori* expectations and predictions, and the interpretation of ambiguous events, toward their being consistent with expectations.”

Such behavior forms a basis for Guttentag’s and Herring’s analysis of *Disaster Myopia in International Banking* (1986). Arguing that the inherent human difficulty of accurately evaluating low-probability events will be compounded by competitive pressures, they find (p. 3) that “an institution that attempts to charge an appropriate premium to develop a reserve against a low-probability shock is likely to lose business to competitors who are willing to disregard the shock.” They also note (p. 5) that “the conditions that encourage disaster myopia also reduce the willingness of firms to invest in the information needed to

⁷ Recent contributions include Shiller (1990, 1995), Calvo and Mendoza (1997), and Dow and Gorton (1997). Although most of the focus in recent modeling has been on rational explanations for phenomena such as herding, some authors explicitly assume irrational behavior.

convert uncertainty into risk . . . [and that] compensation systems for managers that emphasize short-term performance can likewise discourage investment in information regarding low frequency shocks. . . . Even if shock probabilities are perceived without bias, the personal interests of decision makers may cause them to subject their firms to excessive insolvency exposure.” They further state (pp. 12–13) that “since the compensation and power of loan officers are tied to current revenues from loan expansion, they have no incentive to invest in information that might counter disaster myopia. Their personal interest is in ignoring hazards that may not surface for a long time. . . . High job mobility reinforces this attitude, since the loan officer is likely to be in a different job, perhaps with a different bank, before trouble occurs.” Ironically, although they conclude (p. 5) that “underinvestment in information is likely if decision makers believe they can reduce their exposure quickly and cheaply should shock probabilities suddenly rise,” they also suggest (p. 15) that biases operate that make managers slow to react to early warning signals: “The reluctance of decision makers to react to evidence that shock probabilities have risen once their exposures have become very high is a reflection of ‘cognitive dissonance.’ . . . Cognitive dissonance is likely to be resolved by ignoring the new information, rejecting it, or accommodating it by changing other beliefs in ways that serve to justify past decisions.”⁸

From the standpoint of policy, the economic debate about whether such kinds of behavior can or cannot be explained on rational grounds is irrelevant. Whatever the explanation, the brute fact is that the financial markets, at least, sometimes fail to operate in the farsighted efficient manner assumed in many economic models. As a consequence, the ability of financial markets to serve as effective early warning systems is sometimes seriously compromised.

4 The Too Much, Too Late Hypothesis

In an earlier paper, Clas Wihlborg and I (Willett and Wihlborg, 1991) sketched a view of international capital flows in which financial investors, reacting to uncertainty, discounted the future heavily and thus acted on relatively short time horizons. Many scholars suggest, although with little systematic evidence, that a short time horizon in financial markets puts pressure on business and portfolio managers to give

⁸ For further discussion of the incentive structures within financial institutions that lead to insufficient attention to low-probability, but high-cost, risks, see Jorion (1997).

excessive weight to short-term earnings. Combined with this may be a degree of hubris on the part of financial managers who think they will be able to detect problems and safely pull their money out before others do. In this view, investors do not generate unwarranted speculative attacks, and they do not independently cause speculative crises, as charged by many critics of flexible exchange rates and financial markets more generally, but neither do they behave in accordance with farsighted rational expectations. They may not sufficiently anticipate problems, and they may overreact to them once they occur.⁹

Where financial markets focus predominantly on the short-term outlook, the short-term discipline effects on capital flows will be different for monetary policies than for fiscal policies. Although interest-sensitive capital flows will still discipline monetary expansion in the short run, they will make fiscal deficits that are unaccompanied by monetary expansion easier to finance—under both flexible and pegged exchange rates. The so-called twin-deficits appreciation of the dollar during the first half of the 1980s and the funding of the huge Italian budget deficits within the EMS are cases in which international capital flows helped finance “excessive” budget deficits for a period of years and thus provided an escape from, rather than a source of, discipline in the short run (Andrews and Willett, 1997).

This time-horizon problem can be exacerbated under pegged exchange rates. As long as there is little immediate short-term danger of devaluation, international investors may not realize that the high interest rates, which reflect inflation premia, also carry depreciation discounts. Such erroneous perceptions of the differences between nominal and real interest rates promote capital inflows. This source of potentially disequilibrating capital flows has been labeled the “Walters effect” (Walters, 1990). Unlike the Nurkse (1944) critique of disequilibrating capital flows based on the assumption that speculators have excessive expectations of the likelihood of parity changes, Walters-effect flows are based on excessive short-term belief in the credibility of exchange-rate parities.

This phenomenon is compounded in some cases by moral-hazard problems based on beliefs that in the event of disaster—that is, devaluation—politically influential actors will be bailed out by the government.

⁹ After this essay was substantially completed, I came across a concise statement of this too much, too late view by Charles Wyplosz (1997, p. 14): “History suggests skepticism about the ability of markets to impose discipline . . . markets tend to throw good money after bad for a time. . . . When markets do react, it is often too late and too violently.”

In the Asian crisis, the relative importance of moral hazard and the illusion of exchange-rate fixity are still unclear (see Willett, 1999a), but there is no question that the combination led to substantial overborrowing. The old saying that financial markets always overreact has been clearly falsified by a massive amount of empirical research, but overreactions do seem to occur often under the extreme conditions of financial crises.¹⁰

Many commentators explain financial-market instability in terms of the mood swings of investors. There is likely some truth to such explanations, but the emphasis in this discussion is placed on shifts in the mental models—or views—of the world held by investors and borrowers. This emphasis might be described as quasi-rational. In this view, economic agents do not continuously probe and refine their expectations, as economic researchers would, but adopt, instead, popular models, or views, of the world. With costly information, herding will often occur with respect to the adoption of views or models. These views are often somewhat simplistic, as in, “I’ve been impressed with how well the Mexican officials explain their economic strategies so I’m sure investments there will do o.k.” or “you don’t need to really worry about crony capitalism and lack of transparency in an Asian region subject to miracles.” But when such views continue to meet with success for extended periods of time, it is easy to understand why signs of impending problems may fail to be noticed.

When things go badly wrong, some actors will see the result as just a bad draw from their subjective-probability distribution of expected outcomes. Others, however, may think it negates their mental model. In these latter cases, reactions are likely to be much stronger and the flight to safe havens more pronounced. The sharp swings in behavior are thus motivated not only by mood swings from excessive optimism to extreme pessimism, but also by shifts from excessive confidence in a particular model to extreme uncertainty when that model has been discredited.

This story seems to fit the Mexican and Russian crises particularly well. In the Mexican case, many U.S. investors displayed a strong feeling of betrayal by Mexican officials who had failed to carry out their pledges not to devalue. Such faith in official promises seems naive

¹⁰ As a young economist working at the U.S. Treasury in the 1970s, I remember feeling very dismissive of Undersecretary Ed Yeo’s remark that international financial markets would not be a good source of discipline, because they would wait too long and then overreact. Here was one of those typical bankers who didn’t understand economics, I thought. Twenty-plus additional years of following the behavior of international financial markets has taught me to give much more credence to Yeo’s views.

to observers of international monetary history, but many U.S. investors appear either to have been ignorant of such history or to have believed that Mexico was somehow different. Badly burnt, and faced with considerable uncertainty, any sign of mismanagement in the handling of the crisis—and there were many—sent the Mexican stock market and the peso plunging further, generating a widespread cutback in investments across emerging markets. In the Russian case, it was the default on government debt, rather than the devaluation, that shattered the prevailing view that Russia was too important to fail and led to a worldwide, and initially somewhat indiscriminate, flight to safety. In both the Mexican and Russian cases, the initial contagion effects were quite widespread, but after a relatively short time, investors began to assess the political and economic fundamentals in individual countries and to discriminate more effectively. This pattern of early widespread contagion strongly suggests an initial market overreaction.

Just what mental model was broken by the Mexican devaluation? As might be expected, that model varied across investors. All investors shared the belief that the exchange-rate regime would not be changed, and for some, the “model” may have been as simple as that. Many investors, however, may also have believed that sovereign governments simply do not “go broke”—a view that had contributed much to the 1982 debt crises, although it would have been easily discounted by a little knowledge of history, albeit history of more than just the previous two decades.

A likely candidate for more “sophisticated” models is the Lawson dogma, named after the former U.K. chancellor of the exchequer, who forcefully advocated it. This view holds that as long as the host country is not running a large fiscal deficit and capital inflows are private rather than public, the resulting balance-of-payments and exchange-rate positions are equilibrium phenomena and thus cannot be the source of problems. The first part of this proposition is true, in terms of the short-term equilibrium, but the second part does not follow logically from the first. The sustainability of the capital inflows are cause for concern, as are the costs of adjustment if the inflows should suddenly cease. It is quite true that a sizable current-account deficit can be part of a sustainable-equilibrium position for a developing country for some time, but that does not mean that no current-account deficit, of any size, should be a source of worry. Both Dornbusch, Goldfajn, and Valdés (1995) and Edwards and Naim (1997) estimate that sustainable current-account deficits for Mexico in the 1990s would have been about 2 to 4 percent of GDP, but actual deficits ran as high as 8 percent.

The basic correctness of the Lawson dogma was argued forcefully by Mexican officials and accepted by many investors.¹¹ Indeed, one can see how many investment managers might have felt they were being quite sophisticated in understanding that the traditional view that a large current-account deficit was always a problem did not hold in the “new era” of high capital mobility. As French-Davis (1998, p. 33) notes, “in 1996 many outstanding researchers and observers asserted that . . . [Asian current-account] deficits were not relevant if investment ratios and growth were high.” Unfortunately, as events proved, a little bit of sophistication can sometimes be dangerous.¹² Although this widely adopted model was insufficiently complete by the standards of modern international monetary economics, its attraction to “practical” investors, who often display great skepticism toward academic economics, is understandable. To understand the growing riskiness of investing in Asia, one would have had to look beyond aggregate investment ratios and detect that an increasing proportion of this investment was flowing into relatively unproductive uses (Barth et al., 1998; Makin, 1998). Such monitoring obviously requires a much greater investment in data collection and evaluation. Both governments and investors were also slow to notice, in the latter half of the 1990s, that the composition of capital flows was shifting away from direct investment and, within direct investment, away from export sectors toward the nontradable sectors (Parker, 1998). It is not wildly irrational for investors to have missed these problems despite their clear inconsistency with the efficient-markets assumption that all publicly available information is employed. It does suggest, however, that equilibrium can very rapidly become disequilibrium.

Another popular view, or model, focuses on the composition of capital flows, on the assumption that portfolio investment is likely to be quite volatile but that direct investment is not. There is certainly some basis for this belief. Frankel and Rose (1996) find, for example, that the presence of a high proportion of foreign direct investment is associated

¹¹ For further discussion of the Lawson dogma and other “popular” exchange-rate models, see Dornbusch, Goldfajn, and Valdés (1995). On the use of popular models in financial markets more generally, see Shiller (1990).

¹² This was also true with respect to the use of value-at-risk (VAR) management techniques. The backward-looking nature of the estimations in these models likely contributed to insufficient weight being given to forward-looking analysis of the probability of a regime change (Jorion, 1997). They also likely contributed to contagion effects (Garber, 1998).

with a substantially lower probability of crisis. Indeed, the Thai authorities reportedly undertook a self-study in the wake of the Mexican crisis and concluded that despite its similarly large current-account deficits, Thailand's economy was much safer than Mexico's, because it had a high proportion of direct investment in its capital inflows. Unfortunately, the Thais seem not to have reevaluated their position when later data showed a large drop in the share of direct investment.

It is not clear why so many banks and investors adopted mental models suggesting that such a large number of exchange-rate pegs were credible. To be sure, there were many promising signs in the EMS countries and in Mexico and Asia, but there were also numerous signs of danger. Contrary to the economists' usual assumption that financial markets view government policies with considerable skepticism, the markets, in these cases, seemed to highlight the positive and ignore the negative. Herd behavior, combined with a lack of historical knowledge, may have accounted for this acceptance of models based on exchange-rate credibility.¹³ Given the effort devoted to financial research, however, the adoption of such deficient mental models is surprising.

Because these mental models were so enthusiastically accepted, their falsification sent international investors running for safety much more strongly than if they had been taking a deliberate, calculated approach to the risk of devaluation and had simply been the victims of bad luck. In effect, risk became uncertainty, which prompted investors to pull back on their investments until they could better understand the new situation. In such cases, overreaction in the financial markets should not be surprising. The contagion effects of the Russian default in the summer of 1998 are a classic example.¹⁴

The special properties of the foreign-exchange market increase the likelihood that exchange rates will overshoot during crises. The depth of the depreciation of some of the Asian currencies was very likely caused by a lack of sufficient stabilizing speculation in the market, rather than by the presence of active destabilizing speculation. Many of the affected countries were running substantial current-account deficits,

¹³ Belief in the credibility of the Thai peg was more reasonable than for the EMS or Mexico, because it had been held successfully for over a decade. On the at least quasi-rationality of herd behavior in the acceptance of mental models and in financial-market behavior, see the analysis and references in Shiller (1990, 1995) and Kuran (1995).

¹⁴ "Contagion" is used in this essay in the broad sense that a crisis in one country raises risk premia and the risks of crisis in other countries. This may occur for rational or irrational reasons.

so that large capital inflows were needed to keep their currencies from depreciating. Most of these countries, moreover, had large amounts of unhedged short-term foreign debt, and the conservative rush to cover this debt generated additional downward pressure on their currencies. In addition, because trade elasticities tend to be low in the short term, depreciation is likely to worsen the trade balance initially, in the well-known J-curve effect. In the absence of substantial stabilizing speculation, the low short-term trade elasticities may cause the initial depreciation to overshoot the long-term equilibrium rate, even in the absence of any destabilizing speculation. This distinction between insufficient stabilizing speculation and active destabilizing speculation is important for policy. International financial assistance and sterilized government intervention in the foreign-exchange market is likely to be much more effective in the former case than in the latter.

A sharp decline in a market may prompt investors with relatively limited information to exit. In conditions of high uncertainty and risk aversion, they may need to expect a substantial appreciation in order to be willing to provide the capital necessary to finance a current-account deficit. In short-term equilibrium, therefore, the exchange-rate decline might have to overshoot its long-term equilibrium substantially. The amount of overshooting will be greater:

- the larger the initial current-account deficit is,
- the greater unhedged short-term international debt positions are,
- the greater the uncertainty perceived by investors is,
- the greater investors' risk aversion is,
- and the lower trade elasticities are.

The combination of these factors helps explain why overshooting was so much greater for Asia than for the EMS.

At some point along the path of depreciation, expectations that the currency needs to be depreciated further will be quenched. Where there is a substantial risk premium, however, arising from great uncertainty and from an excess supply of currency attributable to current-account deficits and loans maturing, the currency may keep falling significantly beyond the market's best estimate of its short-term-equilibrium value, as determined by the fundamentals. A currency may require a substantial overdepreciation and, thus, expected appreciation in order to persuade brave speculators to stabilize the currency in the short run.

5 A Review of Recent Crises

This section offers a plausibility probe and argues that there is sufficient evidence to suggest that intermediate views such as the too much, too late hypothesis should be taken seriously. It does not attempt to give a full explanation of the international financial crises of the 1990s or to discriminate systematically among the alternative hypotheses that lie between the extremes of fully efficient and wildly irrational financial markets.¹⁵

A review of the recent crises suggests that although the too much, too late hypothesis does not fit all of the complexities of the recent currency crises, it is consistent with the facts in most of them. Markets typically did not give strong early warnings of problems in these countries, and when the crises hit, they hit much harder than was generally expected. The magnitude of these crises was caused, in large part, by the interactions of the currency crises with weak domestic financial structures. In a number of the cases, however, the markets seem to have overreacted.

Meanings of Market Overreaction

We must distinguish among at least four kinds of behavior in investigating the possibility of market overreactions. First, we must ask whether the initial speculative attacks were justified. This is least difficult to evaluate in cases where a currency was widely perceived to be overvalued, as in Brazil or Thailand, although even this criterion may be controversial, given the well-known difficulties of estimating equilibrium exchange rates. Subject to even more controversy are cases such as the attacks on the French franc in the early 1990s, when France had been running good policies and the franc was not overvalued in terms of current fundamentals. In that case, emerging external disequilibria arising from German reunification and expectations of policy

¹⁵ The review of the Asian, Brazilian, and Russian episodes given here is based mainly on reports from the *Economist*, *Financial Times*, *Los Angeles Times*, *New York Times*, and *Wall Street Journal*. Valuable analyses of these crises include Bhattacharya et al. (1998), Corsetti, Pesenti, and Roubini (1998), Dean (1998), Furman and Stiglitz (1998), Goldstein (1998), Kahler (1998), Kawai (1998), Krugman (1998), Radelet and Sachs (1998), Fischer (1999), and Kaminsky and Schmukler (1999). Analyses of all the crises are also offered in various issues of the IMF's *International Capital Markets* and *World Economic Outlook*. A valuable chronology of the period has been compiled by Nouriel Roubini and is available on his web site at <<http://www.stern.nyu.edu/~nroubini/asia/AsiaHomepage.html>>.

reactions raised expectations of future overvaluation and thus may have generated self-fulfilling speculative expectations. A third kind of case involves the currency-market implications of emerging domestic financial problems such as those that existed in Korea. An exchange rate that was not initially overvalued quickly became so when domestic financial problems became widely recognized.

Perhaps the simplest kind of overreaction to investigate is the temporary overshooting of financial markets—in our case, the foreign-exchange market. Modern international monetary analysis stresses that temporary exchange-rate overshooting is consistent with efficient markets where high capital mobility causes exchange rates to mirror temporary fluctuations in interest rates (as in Dornbusch, 1976). This cannot explain overshooting during crises, however, in which higher interest rates coincide with exchange-rate depreciation. In these cases, the relevant issue is whether subsequent appreciations are caused by the correction of market overreactions or by improvements in plausible expectations about fundamentals.

Another kind of possible overreaction involves nonreversing exchange-rate depreciations that are much greater than the initial estimates of overvaluation. Again, this may be difficult to judge, because initial estimates of overvaluation are usually based on much smaller reductions in capital inflows than typically occur during a crisis. Given a large reduction in capital inflows, the equilibrium depreciation will be much greater. Should that occur, one would have to assess the extent to which the decline in capital inflows was caused by investor overreaction, rather than by rational responses to changed expectations.

We can also consider market overreaction in terms of contagion effects on other countries. Again, it is difficult to distinguish indiscriminate market responses from those based on plausible expectations about fundamentals. Judgments may be heavily influenced by the emphasis placed on both time dimensions and intensity. In the recent crises, there is strong evidence of widespread and fairly indiscriminate increases in risk premia immediately after each crisis. Subsequent speculative attacks on the affected currencies, however, were much more selective, and over a matter of weeks to months, risk premia began to show much more differentiated patterns. Given these complexities in judging the extent of possible market overreactions, the short review presented below cannot hope to present definitive evidence. It can, however, give the reader some feel for the parameters of reasonable controversy.

Were the Speculative Attacks Unwarranted?

The criticism made by Prime Minister Mahathir Mohamad and others, including some economists, that the Asian crisis was largely caused by unwarranted destabilizing speculation is not consistent with the facts. It is true that none of the target countries was following the highly inflationary policies that had typically caused past currency crises, but most of them had exchange rates that showed signs of overvaluation, and all of them had substantial weaknesses in their domestic financial structures.

Many of the speculative attacks were partly self-fulfilling, in the sense that if confidence had been maintained, they might have been avoided. In these cases, the underlying fundamentals were not necessarily so bad that speculative attacks were inevitable, although all of the countries were vulnerable. Dornbusch, Goldfajn, and Valdés (1995, p. 256) conclude that for the collapses they reviewed, “none . . . is associated in any way with an unwarranted attack.” I would argue that the same conclusion also holds for crises in Asia, Russia, and Brazil.

In most of the cases under review, one can point to external developments that helped trigger the worsening in the countries’ balance-of-payments positions. In Europe, it was the Maastricht ratification votes against the backdrop of German reunification. In Mexico, a rise in U.S. interest rates contributed to a slowdown in capital inflows, as did the assassination of the front-running Mexican presidential candidate, Luis Donaldo Colosio. In Asia, the strong appreciation of the dollar was the leading external shock. By continuing to peg to the dollar without significant parity adjustments, the Thai government allowed its currency to become substantially overvalued. In Russia, the drop in oil prices significantly reduced export revenues. In a number of cases, the attacked currencies had become clearly overvalued. Examples in temporal order are the Italian lira, the Mexican peso, the Thai baht, the Russian ruble, and the Brazilian real.

Advocates of the destabilizing-speculation view can point to some cases of substantial speculation against currencies that were not obviously overvalued by conventional measures. Even in these cases, however, a good argument can be made that the speculative runs were not triggered by destabilizing speculation. In the case of the French franc, the problem was not a continuing disequilibrium, but, rather, the shock of German reunification, which led to high German interest rates. The combination of signals that Germany would not lower its interest rates, that the Bundesbank would provide only limited support

for the franc, and plausible, if *ex post* inaccurate, expectations that in a recession, the French would be hesitant to increase their interest rates in step suggested a substantial probability that the franc would be allowed to depreciate against the mark. The attack on the franc can thus be explained in terms of plausible expectations of an incipient disequilibrium. This does not fit the “too late” part of our hypothesis, but neither does it square with the view of excessive mood swings as the cause of speculative attacks.

In Asia, both Indonesia and Korea had allowed significantly more flexibility for their exchange rates than had Thailand, and their degrees of overvaluation prior to the summer of 1997 did not appear to be substantial.¹⁶ This observation has led a number of commentators to suggest that one country or both were the subject of unjustified contagion effects (Dean, 1998; Furman and Stiglitz, 1998; Kawai, 1998). This conclusion does not necessarily follow, however. Even if the currencies of these countries had been in initial equilibrium, the additional information that became available about the poor shape of many of their corporations and financial institutions, and the greater attention given to such concerns by investors, could explain the expectations for much reduced capital inflows, even in the absence of concerns about currency depreciations. The resulting prospective balance-of-payments deficit at the old exchange rate could then generate plausible expectations of the need for depreciations. Although in Thailand, causation ran primarily from the currency crisis to the domestic financial crisis, this causation was reversed in Korea, where a growing recognition of domestic financial problems was the primary cause of the currency crisis.¹⁷

Unlike traditional international financial crises, most of the recent crises occurred in countries that had low inflation rates, decelerating inflation rates, or both. There were, thus, no obvious reasons why these countries should not have been able to adjust their parities in response to external shocks without causing investors to lose confidence in their macroeconomic stability.¹⁸ Indeed, with rational speculation,

¹⁶ A recent econometric study by Chinn (1998) finds consistent evidence of overvaluation before the crisis for the Malaysian ringgit, Philippine peso, Taiwanese dollar, and Thai bhat. For the Indonesian rupiah, the evidence was mixed, whereas the Korean won was already undervalued.

¹⁷ Even in Thailand, the initial speculative attack in July 1996 was stimulated by the collapse of the Bangkok Bank of Commerce. On the interrelations between currency crises and financial crises in Asia, see Corbett and Vines (1999) and Mishkin (1999).

¹⁸ A complication in the Asian case, however, was the large amount of unhedged international borrowing. In Brazil, by contrast, devaluation had become widely expected, and most foreign borrowing was hedged.

a devaluation that corrects an overvaluation should make a country a more attractive place for investment. A devaluation should therefore be followed by stabilizing capital inflows. This frequently occurs, but not in a number of the cases considered here.

We can fairly easily explain the initial destabilizing effects of the Italian, Mexican, Russian, and Brazilian devaluations. In all of these cases, the devaluation was considerably less than most estimates of the extent of overvaluation. Thus, the markets both expected that more devaluation was needed and had seen that the government was willing to devalue. Because the devaluations were too small, the consequent further destabilizing of speculative expectations was not surprising, although it would be interesting to know why this was not foreseen by the governments in question.¹⁹ Similarly, in Korea, the authorities contributed to a worsening of expectations by widening the won's daily limit of permissible depreciation and then seeing it depreciate quickly to the limit several days in a row. In all of these cases, the governments soon let their currencies float, but only after they had further undermined market confidence in their economic policies.

Were these examples of unstable markets subject to irrational swings of optimism and pessimism? The possibility that nonrational swings in psychological moods played a role cannot be ruled out, but much of the shift in investor sentiment can be explained in terms of fairly rational agents operating under conditions of poor information and incorrect assumptions or mental models. Part of the strength of investors' reactions may have been caused by belated recognition of the limited or false information on which they had based their investment decisions. Such recognition could easily explain a tendency to pull back on analogous investments and probably explains much of the contagion effects that followed both the Mexican and Asian crises. It is very difficult, however, to discriminate between this "wakeup-call" explanation and unjustified herding behavior. It is interesting to note, however, that in the Asian case, the outflow of bank funds was much larger than the outflow of funds from portfolio investors, who are so often seen as the greatest source of instability.

That there has been considerable disagreement about the extent of contagion in the Asian crisis is not surprising. There is no question that the Thai depreciation led to an immediate increase in risk premia

¹⁹ In the Mexican case, the absence of an initial, clearly announced, macroeconomic policy strategy was also important.

throughout the region. Similarly, the correlation in stock-market returns following the crisis was much higher than in normal periods.²⁰ There was clearly more financial-market contagion than can be explained by the fundamentals. But the contagion typically showed up less as overt speculative runs on currencies than as a slowdown in capital inflows and in decisions not to roll over short-term loans as they came due.²¹ The aftermath of the ruble crisis also appears to suggest that most of the capital outflows from other countries were caused by a flight for safety rather than by overt speculative attack. In the Asian crisis, the largest speculative runs on other Asian currencies (with the exception of the Philippines) occurred after considerable lags, suggesting that they were not the result of blind panic and herding instincts. At a minimum, one should be skeptical about the simple view that the Thai devaluation by itself set the dominos falling throughout Asia. Indeed, the speculative attacks on Korea and Hong Kong appear to have been much more closely related to Taiwan's devaluation—a devaluation that was far from inevitable and may have been caused more by pre-electoral political considerations than by strong speculative pressures. The behavior of the foreign-exchange market, moreover, suggests that Thailand may have imported more instability from Indonesia in January 1998 than it had exported in July 1997.

The Mexican, Asian, and Russian crises were all accompanied by widespread reactions that raised risk premia for borrowing by other emerging markets. Although these reactions were likely rational, they were probably excessive in terms of models of idealized rational decision-making. An understandably negative response to broken mental models, however, helps explain the strength of these reactions. One need not rely entirely on explanations of blind panic or pure herding. That reactions were much milder than responses to the more widely anticipated Brazilian crisis is consistent with this conclusion.

²⁰ Studies of contagion in the Asian crises include Bhattacharya et al. (1998), Masson (1998), Tan (1998), Baig and Goldfajn (1999), and Nitithanpras and Willett (2000). On contagion from the peso crisis, see the analyses and references in Calvo, Goldstein, and Hochreiter (1996) and World Bank (1997). The IMF's *International Capital Markets* and *World Economic Outlook* include analyses of contagion following all of the crises of the 1990s.

²¹ The attack on Hong Kong is an exception. The unsuccessful Hong Kong attack illustrates the difficulties of making judgments about the justifiability of attacks. A loose criterion would say it was justified, because the currency was probably overvalued. A tight criterion would say it was not justified, because many speculators likely did not fully understand Hong Kong's strong currency-board commitment to its exchange rate.

Exchange-Market Overshooting

For Indonesia, Korea, and Malaysia, the behavior of the exchange rate fits the too much, too late hypothesis well. The Malaysian ringgit dropped from approximately 2.5 to the dollar in July 1997 to 4.6 in January 1998, before rebounding to 3.6 in March 1998. The Indonesian rupiah fell to over 13,000 to the dollar in late January 1998 before stabilizing in the range of 7,000 to 9,000 in February. The Korean won fell to almost 2,000 to the dollar in December 1997 before stabilizing in the 1,400 to 1,600 range several months later.

Not all currencies fit this reversible overshooting pattern, however. Any substantial overshooting of the lira was moderate and very brief. Even assuming that none of the lira's exchange-rate movements was caused by news, the maximum possible overdepreciation was about 8 percent for a few days, and 3 to 4 percent for about a month. For the pound, there was no pattern that could be interpreted as overshooting. For the French franc, there was overshooting by, at most, 3 to 4 percent for a few weeks. Thus, for the ERM currencies, we must conclude that the "too much" part of the hypothesis does not hold up well. There were, however, considerable contagion effects on non-ERM currencies, some of which appear not to have been easily justified by the fundamentals (Eichengreen, Rose, and Wyplosz, 1995, 1996). As noted above, the Russian crisis provoked a large market overreaction in terms of contagion effects that temporarily increased risk premia by huge amounts across the globe. This widespread flight to safety, however, was not reflected in a substantial overshooting of the ruble exchange rate.

For other countries, the "too much" aspect of exchange-rate behavior is more difficult to evaluate. In terms of short-run overshooting, the pattern is mixed. As noted, the movements of the ringgit, the rupiah, and the won are consistent with overshooting, but these are dominated by the behavior of exchange rates during January 1998, in which many of the exchange-rate fluctuations can be interpreted as responses to bad news about the extent of financial problems and the policy intentions of governments. Except for Korea, moreover, the major overshooting episodes are not associated with the initial stages of the crisis. Both the Thai baht and the Malaysian ringgit declined rather steadily from June and July 1997 until the large temporary depreciations in January 1998. The same was true for the Indonesian rupiah during November and December 1997.

There is also little evidence of initial overshooting in the case of the Mexican peso. A brief spike at the end of January 1995 and a one-month swing from roughly 6 to 7 pesos to the dollar in March might suggest overshooting, but neither occurred at the very beginning of the crisis as the market-overreaction hypothesis would suggest.

In terms of temporary overshooting, we are left with Asia in January 1998 and Brazil in early 1999 as the leading candidates. In the Brazilian case, the real fell from a little more than 1 to the dollar to more than 2, before rebounding to the 1.6 to 1.7 range. A considerable part of the real's strengthening, however, was connected to reasonable event-based improvements in market expectations. It was not just a case of market overreaction.

Some evidence for the “too much” part of the hypothesis is also provided by the more sustained amounts of depreciation suffered by Mexico and the four Asian countries covered in this essay. Typical estimates of the possible overvaluation of the Mexican peso in 1994 were 20 to 30 percent (Edwards and Savastano, 1998), but the peso fell by more than half its value against the dollar. Similarly, the Asian currencies and the Brazilian real initially fell far more than the standard previous estimates of the amount of overvaluation. For Mexico and Indonesia, the large discrepancies between *ex ante* estimates and the *ex post* behavior of these exchange rates may be partly explained by the subsequent high inflation. They may also be explained by subsequent revelations that financial situations were far worse than had been generally recognized. This latter explanation was true for both Korea and Indonesia.

Another explanation for greater than expected depreciations is that typical estimates of overvaluation were based on “guesstimates” of sustainable levels of capital inflows that, although far lower than actual inflows prior to the crises, were still expected to be positive. A complete cessation of net capital inflows or the emergence of net capital outflows would require a much larger depreciation to generate balance-of-payments equilibrium. Estimates of overvaluation are typically based on noncrisis corrections of exchange rates, that is, they are based on estimates of medium-term equilibrium relationships, given no significant changes in the fundamentals. The Mexican, Asian, and Russian crises, however, changed not only exchange rates, but also perceptions of the fundamentals. Recognizing this, it should not be surprising that depreciations were much greater than the typical precrisis estimates of overvaluation. Excessive depreciations of the currencies are a counter-

part to an excessive decrease in net capital inflows. As the 1980s debt crisis suggests, moreover, this is a condition that can be maintained for a substantial period of time.

Although there was undoubtedly some panic among investors during the 1990s, the markets kept their ability, even during the height of the crises, to respond positively to good news as well as negatively to bad.²² Thus, although markets may well have overreacted on average once the crises began, they still usually responded sensibly to economic and political news. Once into the crisis, the foreign-exchange and stock markets appeared to provide healthy incentives for the adoption of sound economic policies, typically strengthening on news that reforms were being implemented and weakening on reports of backsliding.

The Lack of Early Market Discipline

In all of the cases reviewed in this essay, the governments led the markets to believe that country authorities were firmly committed either to keeping their exchange rates fixed or, in the cases of Brazil, Indonesia, Korea, Mexico, and Russia, to limiting them to slow rates of crawl. Economists and policymakers have noted the difficulty of gaining credibility for government stabilization efforts. In these cases, however, there appears to have been a problem of “excessive credibility” with regard to government exchange-rate policies (see Artus and Bourguinat, 1994, for the EMS). In the Western European and Mexican cases, forward markets and interest-rate differentials gave no strong signals of speculative concerns about devaluation until shortly before the full crisis hit. For the EMS currency crisis of 1992, Rose and Svensson (1995, p. 107), for example, conclude that “the currency crisis was not preceded by a gradual deterioration in ERM credibility . . . despite the increasingly dire economic news from both Germany . . . and the other ERM participants (including the British recession, the cumulative deterioration in Italian public finances, and competitiveness problems in both Italy and the United Kingdom)”; see also Dornbusch, Goldfajn, and Valdés, 1995; Eichengreen, Rose, and Wyplosz, 1995, 1996; and Buitier, Corsetti, and Pesenti, 1998. Italy devalued on September 14, and both Italy and the United Kingdom were forced out of the ERM on September 16. Modest market signals of increased expectations of devaluation did not begin to appear until late August.

²² Baig and Goldfajn (1999) and Kaminsky and Schmukler (1999) find evidence of somewhat stronger reactions, on average, of Asian stock markets to bad, than to good, news. Baig and Goldfajn (1999) also find some asymmetry in currency market reactions, whereas Jo and Willett (2000) find more symmetrical responses.

In the Mexican case in early 1994, the combination of rising U.S. interest rates, fears about whether the North American Free Trade Agreement (NAFTA) would be passed by the U.S. Congress, and the assassination of Mexico's leading presidential candidate generated a substantial reduction in capital inflows to Mexico and stimulated a speculative run on the peso. With the passage of NAFTA and U.S. support of the peso through a swaps arrangement, the markets calmed and the interest differential against dollar assets fell substantially. It did not rise again until further problems in Chiapas generated massive speculative attacks in December (Obstfeld and Rogoff, 1995; Goldstein and Calvo, 1996; Edwards, 1998). Although the pre-December interest differentials were sufficient to indicate a lack of full credibility in the peso exchange-rate band, the general impression on Wall Street prior to the December speculative run was that the Mexican situation had stabilized.²³ Paul Krugman (1996, pp. 374–375) concludes that “it is hard to avoid the suspicion that financial markets were simply myopic in the runup to both the ERM and the Mexican crisis. . . . Unfortunately, this conclusion wreaks havoc with all of the currently popular models.” This excessive credibility is difficult to understand in the European case. It is even more difficult to understand why the lessons of the EMS crisis were not remembered by investors in Mexico and why neither crisis appears to have changed the mental models of many investors in Asia. There was, of course, a substantial initial reevaluation by investors after the Mexican crisis.

Mexico clearly showed that strong budgets and low inflation are not sufficient to avoid a crisis, but the high investment ratios in Asia and the widespread perceptions of the Asian miracle suggested to many that Asia was different from Mexico. Initial evaluations in 1995 that Asia was still a good investment were probably sound. Once these evaluations had been made, however, they do not appear to have been reexamined sufficiently as further information became available.²⁴

²³ Interestingly, with regard to the view that international investment is a cause of instability, it was Mexican nationals, and not international investors, who led the exodus. This appears to have been a response partly to consultations by the government with business leaders (see Dornbusch, Goldfajn, and Valdés, 1995).

²⁴ Some economists, such as Furman and Stiglitz (1998), have argued that the Asian crisis could not have been predicted from earlier experience. Others, such as Salvatore (1999), argue that the similarities of symptoms in Mexico and Thailand made it clear that a baht crisis was likely. This was certainly the view of my Thai students. Although many have called the Asian crisis unique, Caprio and Honohan (1999) remark on its resemblance to the crises of the countries in the Southern Cone of Latin America from 1979 to 1982.

Asian banks and corporations thus continued to respond to lower interest rates abroad by borrowing that was largely unhedged, and industrial-country banks lent on terms that were excessively favorable with respect to past statistical correlations with risk (Cline and Barnes, 1997). Belief in the probability of government bailouts, should disasters occur, undoubtedly contributed to the size of the resulting capital flows, but these cannot fully account for weaknesses of market reactions to growing risk. An analysis of the composition of capital flows to the countries hardest hit by the Asian crisis does not reveal the sharp differentiation in behavior between the types of flows most and least likely to be subject to bailouts that one would expect if moral hazard had been the dominant consideration (Willett, 1999a).

Thailand is a partial exception to the generalization that the currency crises were not predicted. The markets provided warning signals in 1996, and by the beginning of 1997, international portfolio inflows had begun to drop substantially. However, these signals do not appear to have triggered a major shift toward hedging by the Thai business and financial communities. Thus they were hit heavily when the baht was allowed to depreciate.

Although there appear to have been few lessons learned from the EMS and Mexican crises, the Asian crisis seems to have greatly reduced the markets' belief in the credibility of government commitments to pegged-exchange-rate regimes. In Russia, moral hazard played a leading part in allowing the Russian government to continue to finance large budget dollar deficits with dollar-denominated debt until shortly before the crisis hit, even though interest rates denominated in domestic currency gave ample warning that the ruble's crawling-peg regime was less than fully credible. In this case, the markets performed their role of giving graduated warnings about exchange-rate-regime problems, but they provided little discipline for public finances. In Brazil, the story was largely the same. Despite the Brazilian government's strong protestation that it was committed to maintaining its slowly-crawling-peg regime for the real, domestic interest rates began to display a significant depreciation risk premium well before the crisis hit. In both Russia and Brazil, the doubts signaled by the financial markets about the sustainability of the exchange-rate regimes put upward pressure on domestic interest rates but did not result in all-out speculative attacks. In other words, the markets were doubtful about the pegs but were not fully confident that they would not be maintained for at least a while longer. These reactions were certainly not cases of unwarranted speculation. Indeed, if the world had behaved according to the perfect-capital-mobility models so widely

used in our economics classrooms, these crises would have come much sooner. In each case, the timing of the fiscal attack was sparked by the failure of the country's legislature to pass government fiscal initiatives that were crucial parts of IMF programs.

6 Government Responses to Crises

Although the average level of exchange rates during the crisis periods may have depreciated "too much," financial markets typically still responded reasonably to economic and political news. Their reactions did not suggest that they were in blind panic or had become so excessively pessimistic that they only responded to bad news. Announcements of good news, such as sensible economic reforms and stabilization policies, usually caused currencies to strengthen. Thus, despite the general failure of financial markets to provide sufficient discipline to head off the crises, once the crises had occurred, the markets generally behaved in a way that produced substantial incentives for governments to adopt stability-producing policies. Belatedly, therefore, the markets did provide incentives for discipline. The substantial differences in government responses to these incentives, however, have been interesting.

The financial markets can impose significant economic and political costs on governments, but as Milner and Keohane (1996, p. 20) stress, "political leaders have a degree of latitude in how they respond to internationalization. In large part, this range of choice is a function of the domestic institutional framework in which they must operate." This is illustrated by the wide range of responses by emerging-market governments to the financial crises of the 1990s. None of the governments involved showed much foresight in anticipating the adverse consequences of the policies that contributed to the crises. Under the force of the crises, however, some governments, such as those in Mexico and Korea, reversed themselves rather abruptly and gave high priority to pursuing the painful policies that would calm markets and lay the groundwork for restoring a prosperous economy.

Brazil also responded to the crisis with renewed efforts to bring down its huge budget deficits. Indeed, the forced abandonment of the real's crawling peg and its subsequent large depreciation appeared to do more to spur the legislature to pass the fiscal measures agreed to by the IMF and the Brazilian government than had the initial defense of the real.

The Russian case is, sadly, quite different. In Russia, the crisis provoked a strong nationalist reaction, with Mr. Yeltsin agreeing to share much more power with the communists in order to protect himself

politically. Although the new government of Prime Minister Primakov continued to pay lip service to the need for sufficient fiscal attention to restore IMF and private-market lending, six months after coming to office, it had still not formulated a coherent economic strategy. It is hard to argue that the political changes following the crisis did not set back reform efforts in Russia, although the initial fears of a highly inflationary government response were proven wrong.

Asia has presented a range of responses. In Thailand and Korea, the crisis has led to much desirable economic reform. There was relatively little rhetoric blaming the foreign speculators and, although the pace of reform has been slower than most economists would like, it has still been substantial.

In Indonesia and Malaysia, the initial responses were quite different. The long-time strongmen governing Malaysia and Indonesia were unwilling to emulate the seriousness of the Korean and Thai policy responses. Malaysian Prime Minister Mahathir Mohamad shocked international financial markets by blaming the crisis on Westerners and Jews, who, he said, were jealous of Malaysia's economic success and were trying to topple the economy. Although Indonesian President Suharto's initial public statements were less accusatory, his actions became even more so.

The first Indonesian government responses to the crisis were constructive. The government floated the rupiah on August 14, 1997, and on September 3, it announced an ambitious reform package. This package included a freeze on a number of large infrastructure projects and a promise of banking reform that included shutting down insolvent banks. The governor of the Bank of Indonesia described the government response as a "self-imposed IMF programme," and both the rupiah and the stock market strengthened. As private estimates of the amount of foreign debt mounted, however, market confidence fell. The rupiah continued to depreciate, and the government was forced to apply for a formal IMF stabilization program. On October 31, a \$43 billion rescue package was announced. Markets were stunned, however, and the temporary stabilization of the rupiah was brought to a screeching halt when on January 8, 1998, President Suharto announced a new "austerity budget" calling for a 24 percent increase in government spending. That day, the rupiah fell by 26 percent against the dollar, and the Indonesian stock market tumbled.

Apparently oblivious to the fact that his actions were undercutting the chances of the IMF program to boost confidence, President Suharto seemed to accept critics' views that the IMF program was not working.

Prodded by members of his family, and against the advice of most of his own economic advisors, the international financial community, the IMF, the World Bank, and the U.S. Treasury, President Suharto decided to gamble on the adoption of a currency board that would fix the rupiah to the dollar at a rate rumored to be between Rp5,000 and Rp6,000—roughly twice the market rate.

One can interpret Mr. Suharto's announcement of a currency board as bowing to the discipline of the market. It is more likely, however, that he was hoping the currency board would provide a quick fix that would allow the economy to escape a painful adjustment. Few international economists shared this optimistic view. The strengthening of the rupiah induced by the currency-board announcement lasted only a few days. By letter on Friday, February 13, and public statement on Monday, February 16, IMF Managing Director Michel Camdessus made it clear that the IMF would halt disbursement from the \$43 billion stabilization package if Indonesia proceeded with plans to establish a currency board.

Eventually, President Suharto backed away from the currency-board proposal, and his government resumed serious negotiations with the IMF, but considerable damage had been done. It may not be coincidental that the switch to a more conciliatory attitude by Mr. Suharto did not begin until after he had been safely "reelected" to another term as president. In a clash between financial-market pressures and domestic political pressures, it would not have been wise to bet on the dominance of market pressures at election time. Reelection, however, was not sufficient to keep President Suharto in power. Continuing economic distress, widespread domestic opposition to cronyism, and support for a more democratic government ultimately forced Mr. Suharto to step down. Continuing uncertainties about his successor's degree of independence and commitment to political and economic reforms have unfortunately kept the rupiah from making a full recovery from its spring 1998 plunge.

As with the use of pegged exchange rates as nominal anchors and IMF policy conditionality, the discipline effects of financial markets have varied considerably in strength. Although international capital markets have generally not been able to prevent crises, their power has been substantial once a full-fledged crisis has occurred.²⁵ Thus, when international financial-market discipline works, it appears to be a rather blunt instrument. Its effects, moreover, are sometimes perverse, as in Russia.

²⁵ The dramatic turnaround in French economic policy under François Mitterand in the early 1980s is a prime example.

7 Concluding Remarks

Although the too much, too late hypothesis cannot provide a full explanation of the international financial crises of the 1990s and does not fit each crisis perfectly, it has considerable explanatory power. The approach advocated in this essay offers a rich menu for political-economy and financial research. There is much we do not know about the time horizons of the various kinds of participants in international financial markets, the incentives they face, the risk-management strategies they follow, and the processes by which they adopt mental models and process information flows. We have also much to learn about the processes that determine government responses to signals from international financial markets and to the pressures generated by IMF policy conditionality and pegged exchange rates. The evidence reviewed here suggests, however, that it is not wise at present to assume that international capital flows will provide either a reliable early warning system or a source of continuous discipline for governments' macroeconomic policies. Financial markets, like voters, have tended ultimately to sanction politicians for bad economic policies—although often only after much damage has been done.

Acknowledgment that the international financial markets have performed imperfectly as sources of discipline suggests the need for a two-pronged strategy to increase discipline. One part of this strategy would be to recognize that most countries should place primary emphasis on domestic measures such as inflation targeting, central-bank independence, and reforms in budgeting procedures. Although the use of exchange rates as nominal anchors often provides short-term benefits, the effects on long-term discipline are often quite limited, and political-economy considerations make it difficult to change course before pressures rise to crisis levels. The principal exception to this suggestion is for countries that score high on optimum-currency-area criteria and that consequently find it desirable to adopt genuinely fixed exchange rates through a currency board, dollarization, or common-currency arrangement. Even in such cases, however, domestic reforms are essential to promote labor-market flexibility and budgetary responsibility.

The rash of crises during the 1990s offers confirmation of the economists' unholy trinity that pegged-exchange-rate systems will be difficult, if not impossible, to operate in a world of high capital mobility and independent national macroeconomic policies. Although crawling bands have been used successfully by a number of countries, high capital mobility is clearly pushing countries toward the extremes of genuinely

fixed or genuinely flexible exchange rates. Financial and currency markets are likely to perform much better under either of these extremes than under the intermediate case of adjustably pegged exchange rates. This likelihood presents another argument against the use of pegged, as opposed to fixed, exchange rates as a nominal anchor.²⁶

The second part of the strategy would be to take measures to improve the operation of international financial markets. Even though it appears that little was learned as we moved from one crisis to another during most of the 1990s, there are positive signs that messages are finally getting through. Many important financial institutions in the industrial countries are seriously reevaluating both their risk-management strategies and their internal incentive structures and control mechanisms. Throughout the emerging markets as well, economic agents are learning to show healthy skepticism toward government commitments to pegged exchange rates. Thus, the Russian devaluation (as opposed to default) was much more widely anticipated than was the Mexican devaluation, and the Brazilian devaluation was more widely anticipated still. The global repercussions from the Brazilian crisis were also much milder than were those from the earlier crises.

The recent crises have highlighted problems of data availability and accuracy, and improvements in these areas are already under way. More difficult to reduce will be the problems of lax borrowing and lending generated by many forms of moral hazard. The Russian default has certainly put an end to any expectations raised by the Mexican bailout that purchases of government debt denominated in foreign currencies are risk free, but moral hazard with respect to private-sector borrowing is still a major issue.²⁷ How politically feasible it will be to limit expected government bailouts of the private sector by governments in the emerging-market countries is open to question, but such limits should be an important condition of future IMF loans.

It is not surprising that, in the wake of the recent crises, there has been a renewed call for controls on international capital flows. The too much, too late hypothesis has important implications for this debate as well. Its emphasis on imperfections in the operation of international

²⁶ Grier and Grier (2000) find that developing countries that began 1997 with pegged exchange rates suffered substantially greater currency depreciations and stock market declines, on average, than did countries with flexible rates.

²⁷ For discussions of proposals for policy reforms to generate better incentive structures for participants in the international banking and financial markets, see Caprio and Honohan (1999), Eichengreen (1999), and Rogoff (1999).

financial markets suggests a role for government intervention, but its rejection of capriciously destabilizing speculation suggests that the appropriate role for such intervention is much more limited than many critics of international financial markets maintain. Although most of the crises in the 1990s were preceded by excessive capital inflows, host-government policies that promoted pegged-exchange-rate illusions and expectations of bailouts were the primary (albeit not exclusive) causes of the excessive inflows. In some cases, government policies actively encouraged short-term international borrowing. We must therefore ask to what extent the political-economy pressures that produced these perverse policies would allow governments to pursue the efficient regulation of capital flows. It is essential that the reemerging debate on capital controls and supervision be addressed from a political-economy perspective, not just a purely economic perspective, and that it be framed in terms of prudent strategies for the management of international risk, not in terms of ideological debates about the benefits and evils of capitalism.²⁸

Imperfections in the operation of international financial markets also provide a strong rationale for a strengthened role for the IMF as an agent of discipline and crisis avoidance and containment.²⁹ To the extent that markets overreact in the face of crises, there are substantial potential benefits to the provision of official financial assistance to countries suffering from financial crises.³⁰ Much-publicized failures of IMF programs have damaged the credibility of the IMF's seal of approval. This is extremely serious. The catalytic role played by IMF programs in facilitating access to borrowing from international financial markets has, in many cases, been more important than the official funds provided. It is essential that the IMF make the restoration of the credibility of its programs one of its highest priorities (see Willett, 2000).

²⁸ A good example is given by Eichengreen's (1999) argument for a Chilean-like tax on short-term capital inflows as a second-best approach for countries that have weak domestic financial-management and regulatory structures. For an argument that this approach should be linked explicitly to international reserve management policies, see Willett and Denzau (1999). On the role of adequate international reserves in helping to protect countries from speculative attacks, see Fischer (1999) and Nitithanpras and Willett (2000).

²⁹ For discussions of the revisions in IMF practices in the wake of the Mexican crisis, see Eichengreen and Portes (1997).

³⁰ For recent discussions and proposals concerning international aspects of lender-of-last-resort and crisis-management functions, see Calomiris (1998), Fischer (1999), Meltzer (1999), and Rogoff (1999).

Even with the strongest IMF programs, however, the turnaround in market behavior is often likely to be delayed after a crisis, giving rise to a need for temporary official financing. This probable delay makes a strong case for more front-loading of funds in IMF programs, a case that must, of course, be balanced against the need not to undermine conditionality. The substantial amount of adjustment undertaken by Mexico and the Asian crisis countries, however, suggests that large rescue packages do not necessarily undermine the incentives for adjustment, as some critics of the IMF have charged.

The recent crisis episodes suggest that, on average, the IMF has been a better forecaster of emerging policy inconsistencies than national governments, rating agencies, or private financial markets have been. But the IMF has not been successful in persuading national governments to act in a timely fashion to avert crises. Perhaps the pain caused by the recent difficulties will encourage national governments to heed IMF advice before crises are generated. With the exception of the abandonment of adjustably pegged exchange rates, it is hard to think of any measures that would reduce the incidence of future crises more than would a substantial strengthening of the effectiveness of IMF surveillance. As Goldstein and Calvo (1996, p. 258) argue, “both private market discipline and official surveillance are prone to weaknesses that can reduce their effectiveness; therefore relying exclusively on one or the other would be ill advised.” We urgently need to push forward on both fronts.

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